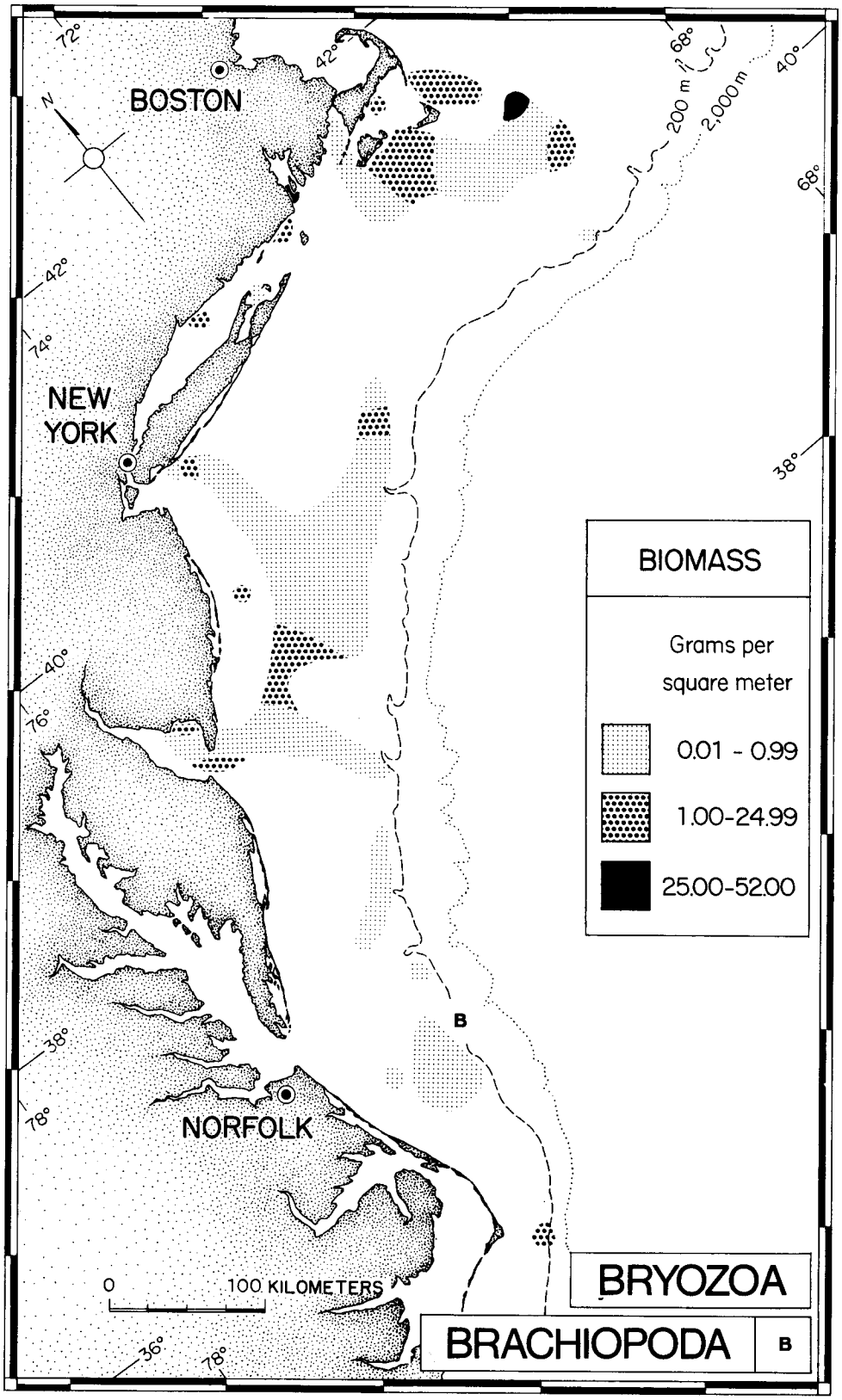

FIGURE 61.—Geographic distribution of the biomass of Bryozoa and Brachiopoda (*B*), expressed as damp weight per square meter of bottom area.

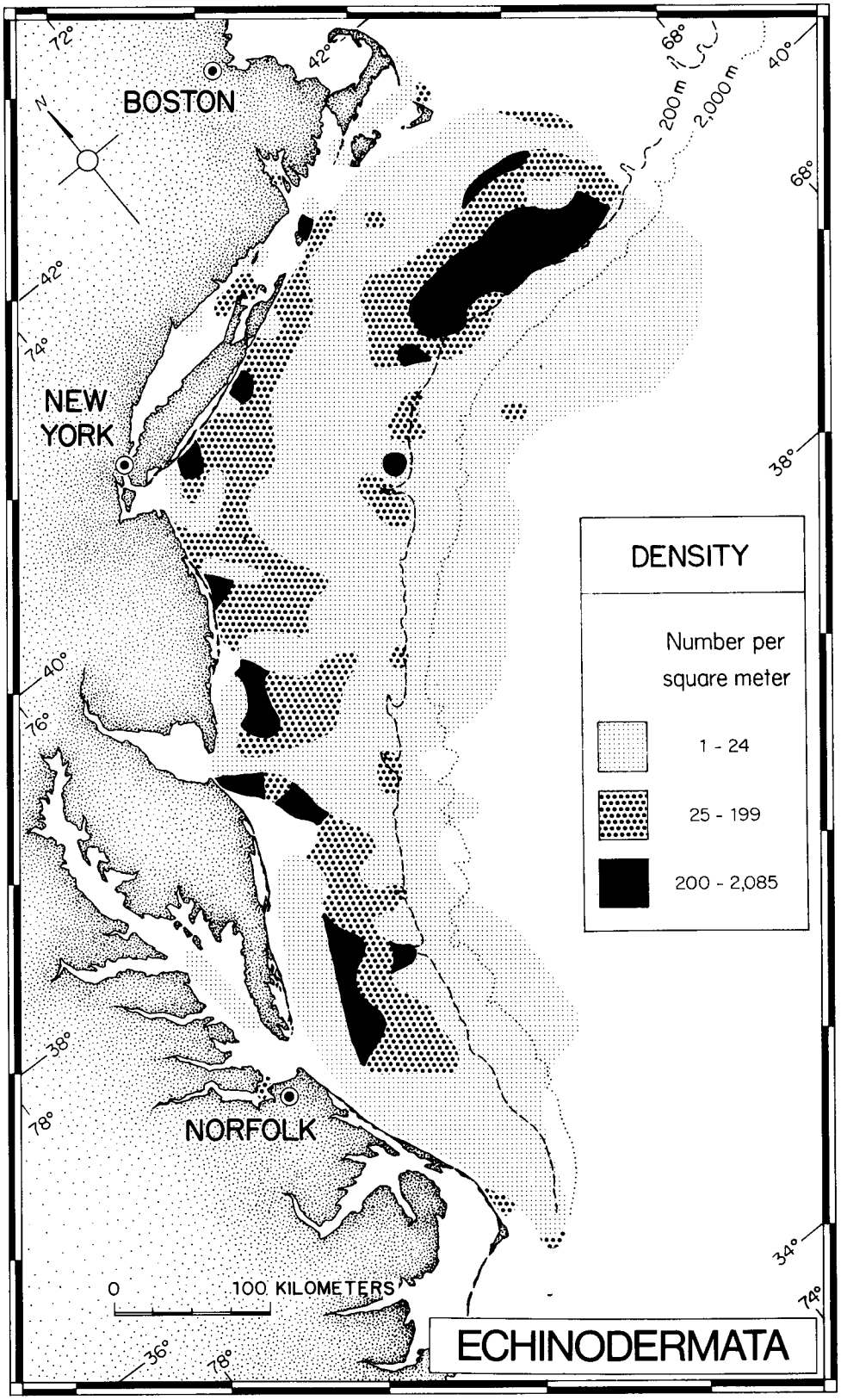

FIGURE 62.—Geographic distribution of the density of Echinodermata, expressed as number of individuals per square meter of bottom area.

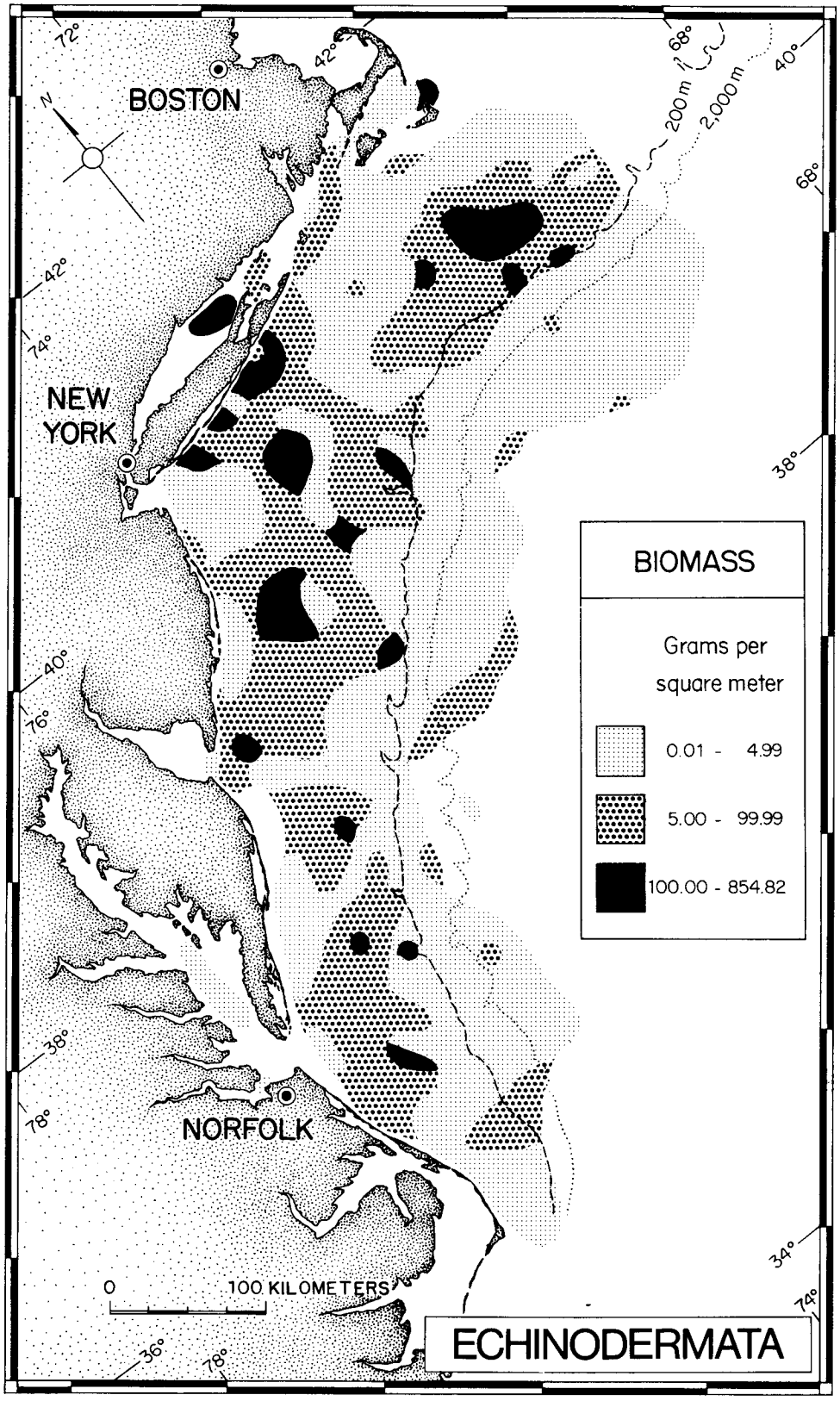

FIGURE 63.—Geographic distribution of the biomass of Echinodermata, expressed as damp weight per square meter of bottom area.

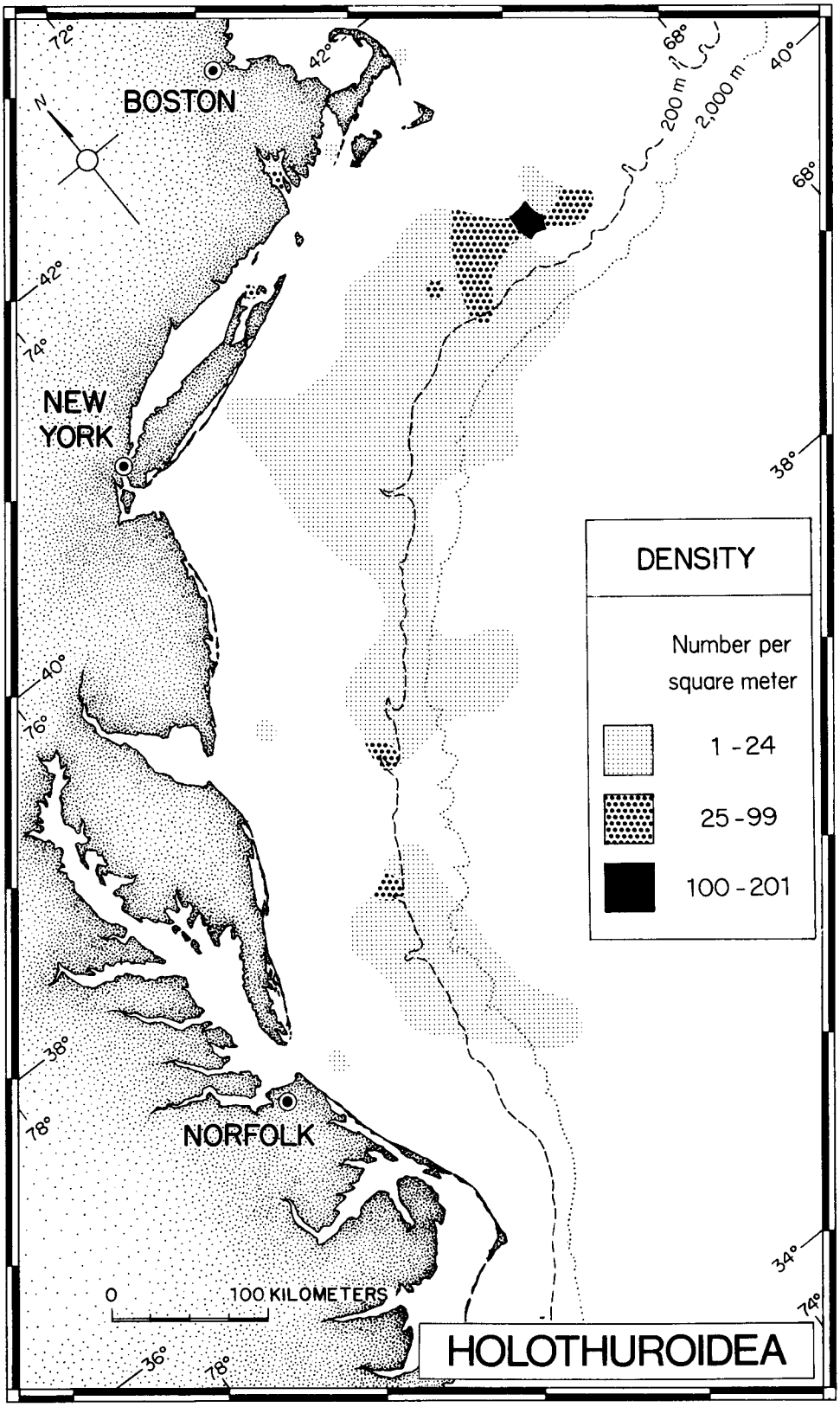

FIGURE 64.—Geographic distribution of the density of Holothuroidea, expressed as number of individuals per square meter of bottom area.

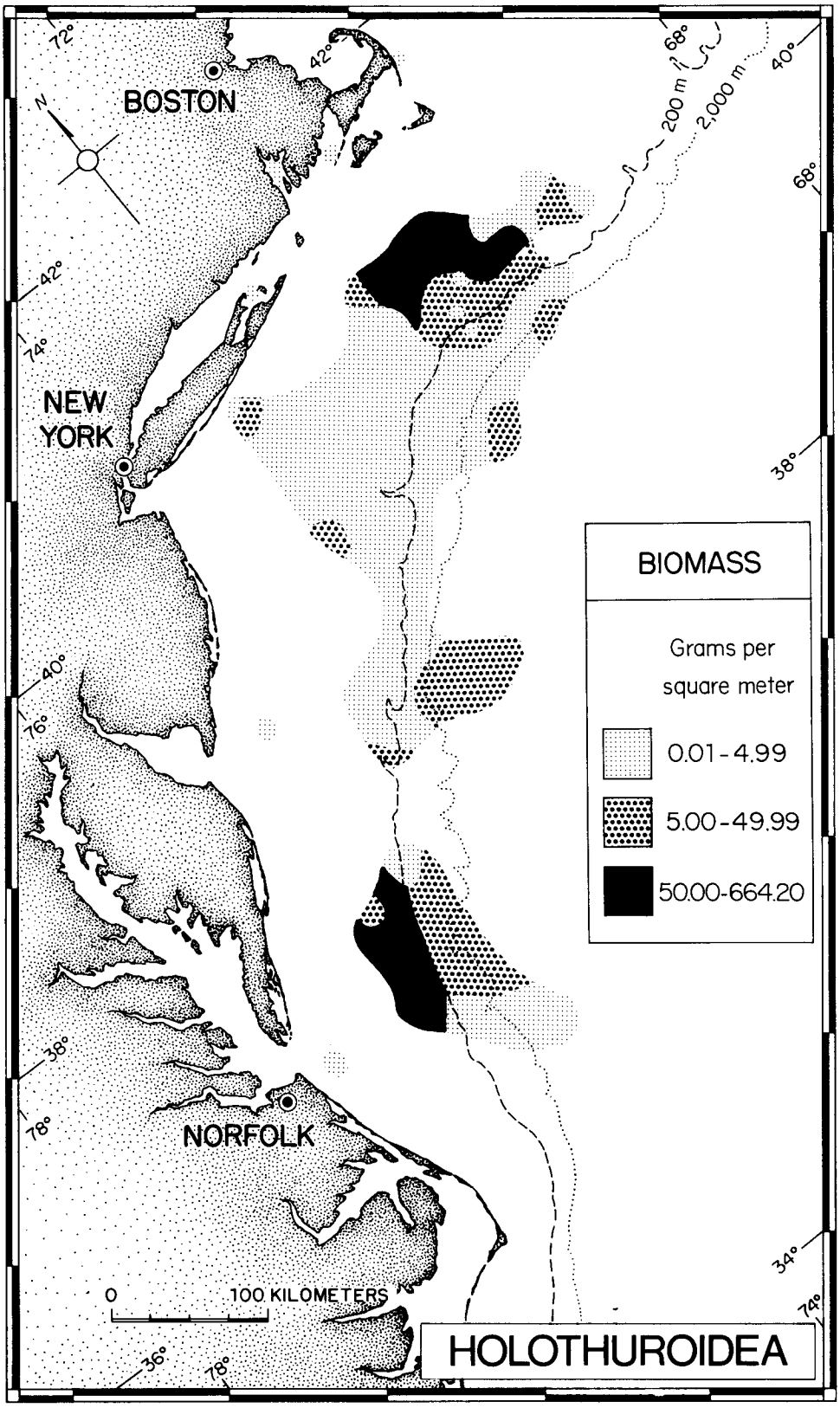

FIGURE 65.—Geographic distribution of the biomass of Holothuroidea, expressed as damp weight per square meter of bottom area.

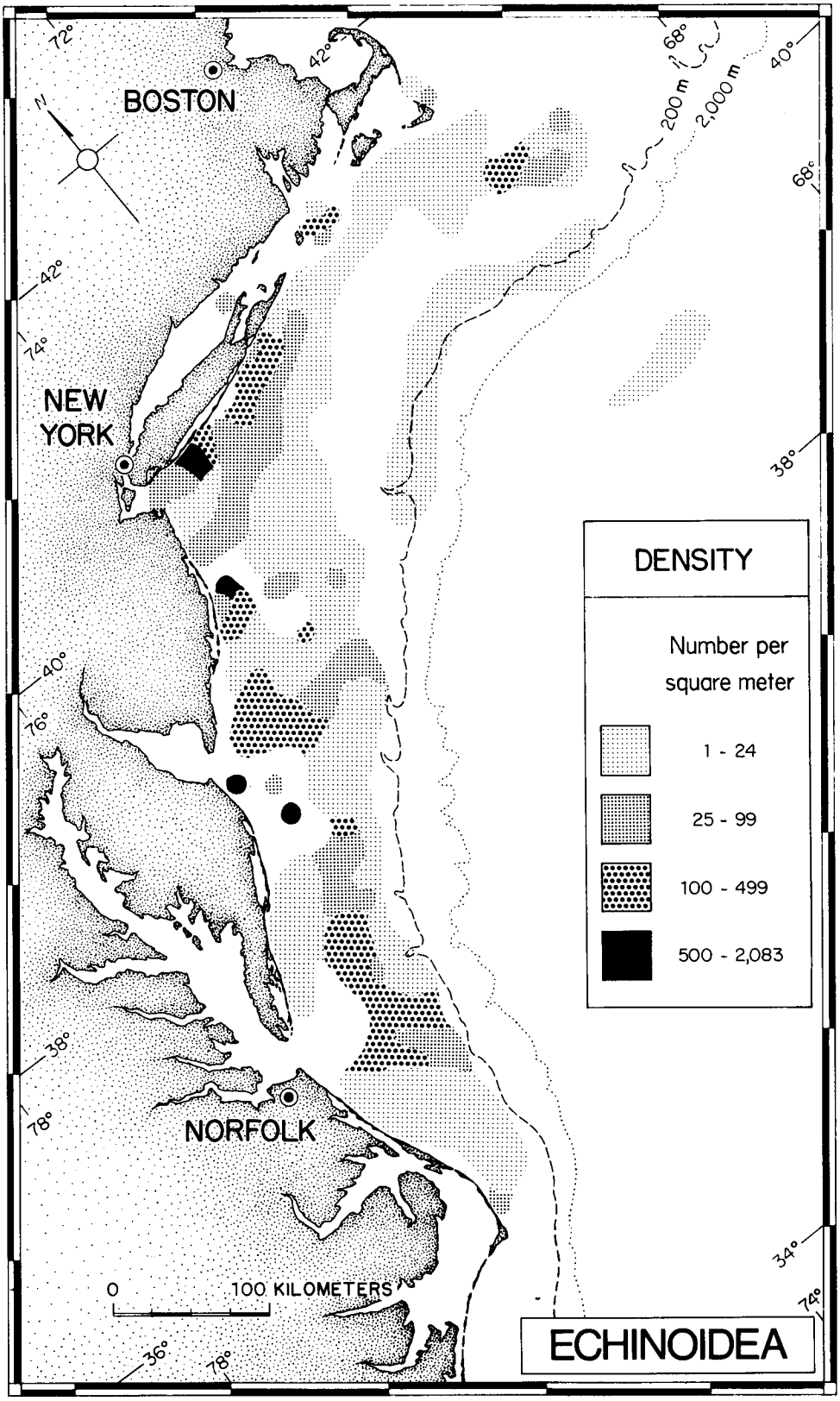

FIGURE 66.—Geographic distribution of the density of Echinoidea, expressed as number of individuals per square meter of bottom area.

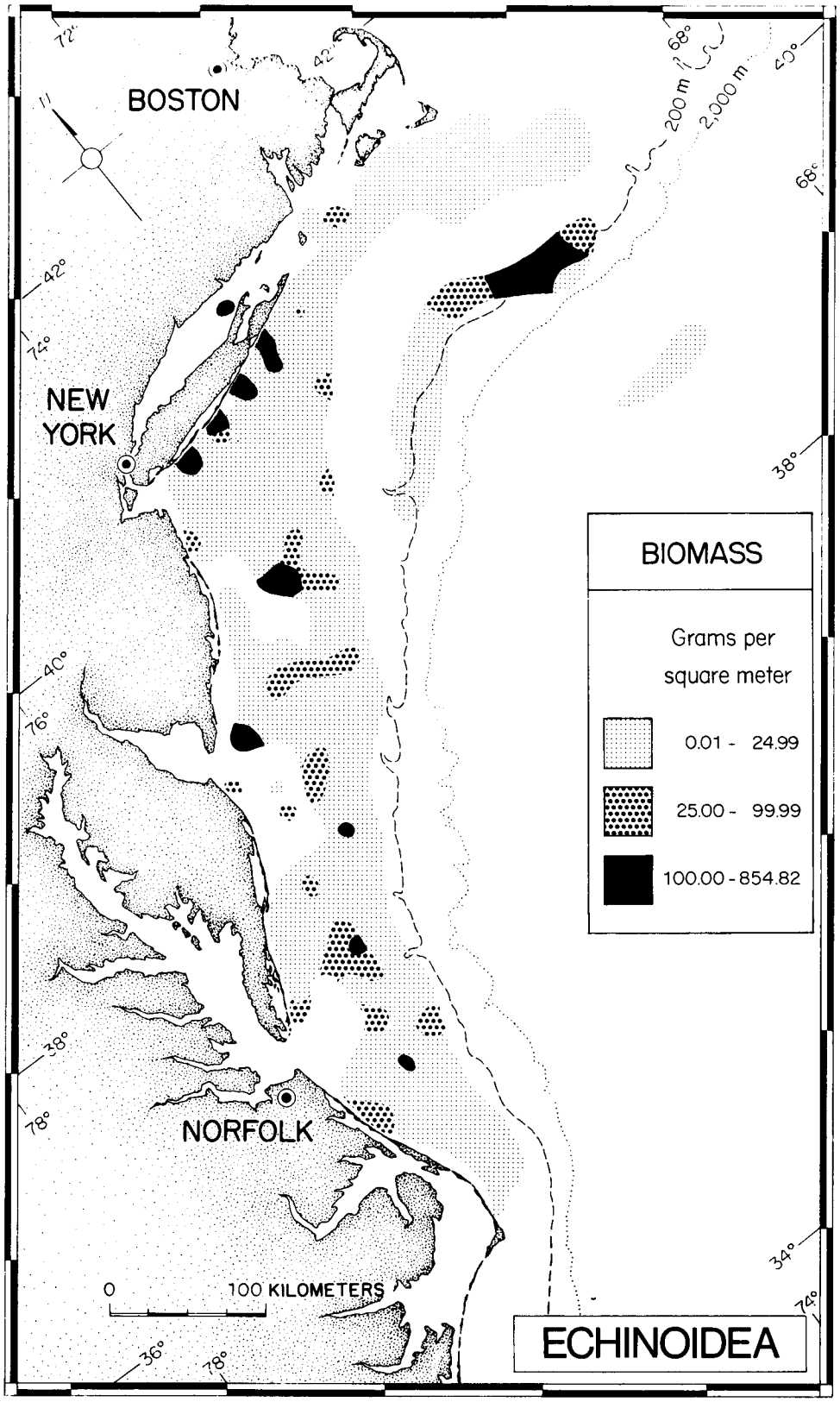

FIGURE 67.—Geographic distribution of the biomass of Echinoidea, expressed as damp weight per square meter of bottom area.

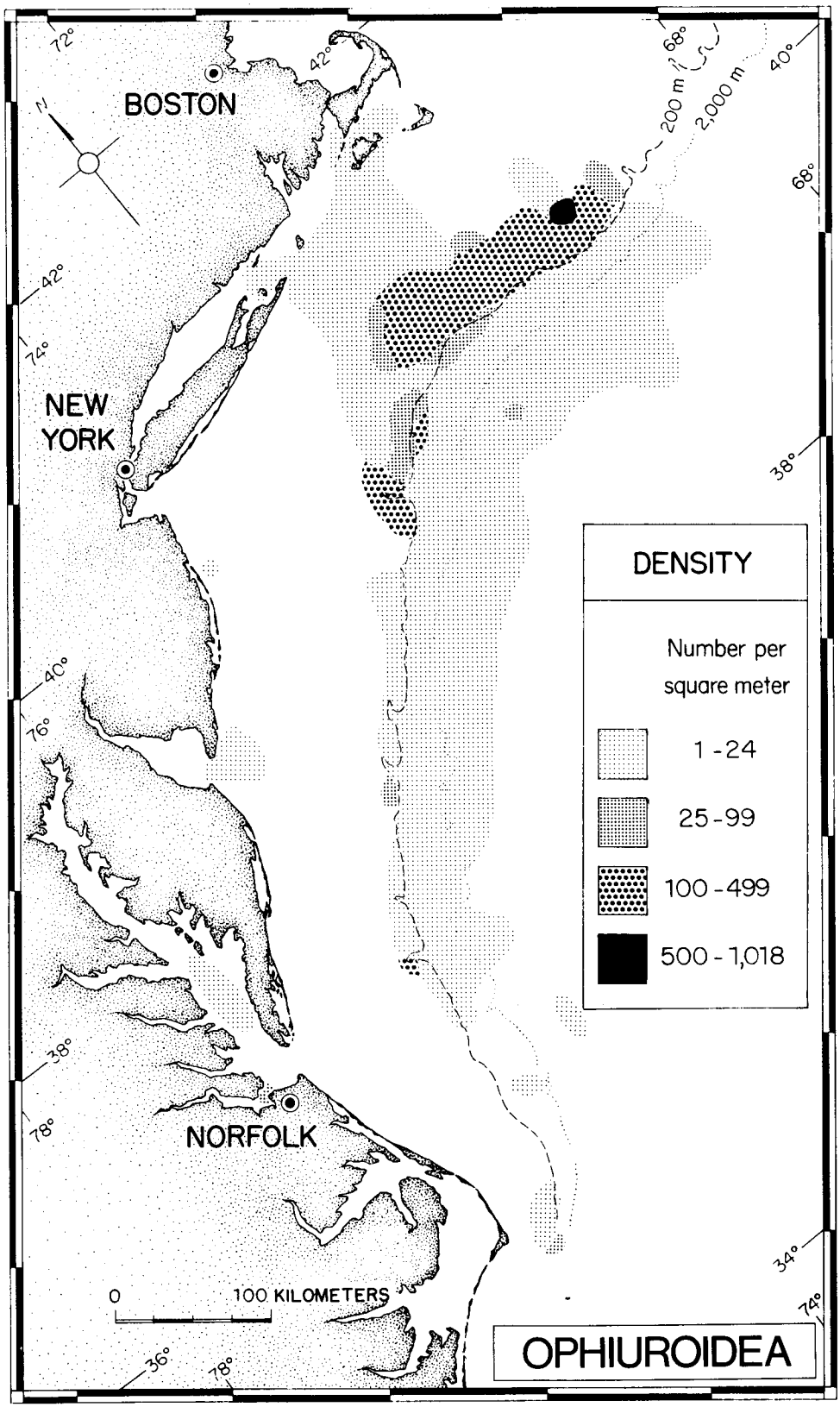

FIGURE 68.—Geographic distribution of the density of Ophiuroidea, expressed as number of individuals per square meter of bottom area.

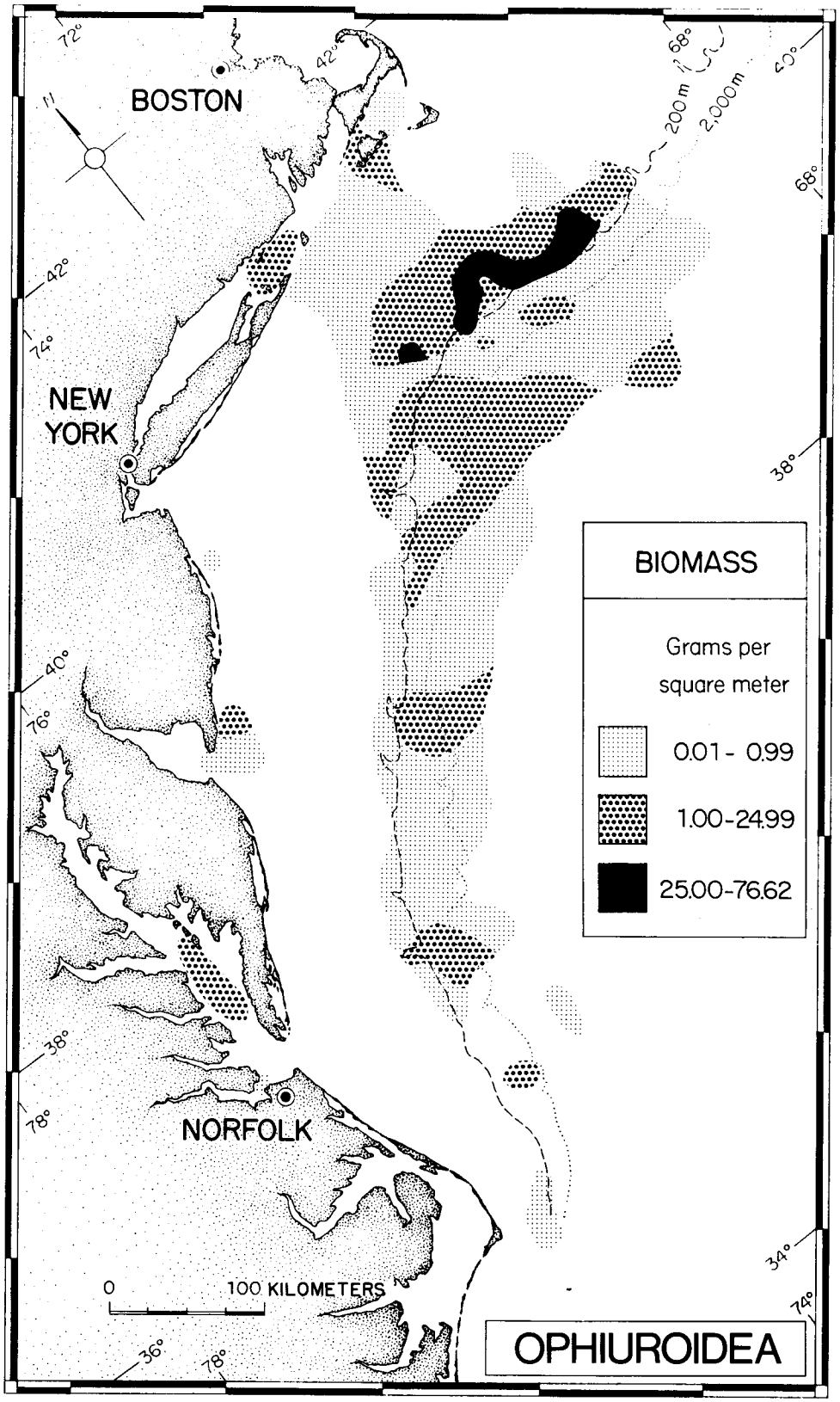

FIGURE 69.—Geographic distribution of the biomass of Ophiuroidea, expressed as damp weight per square meter of bottom area.

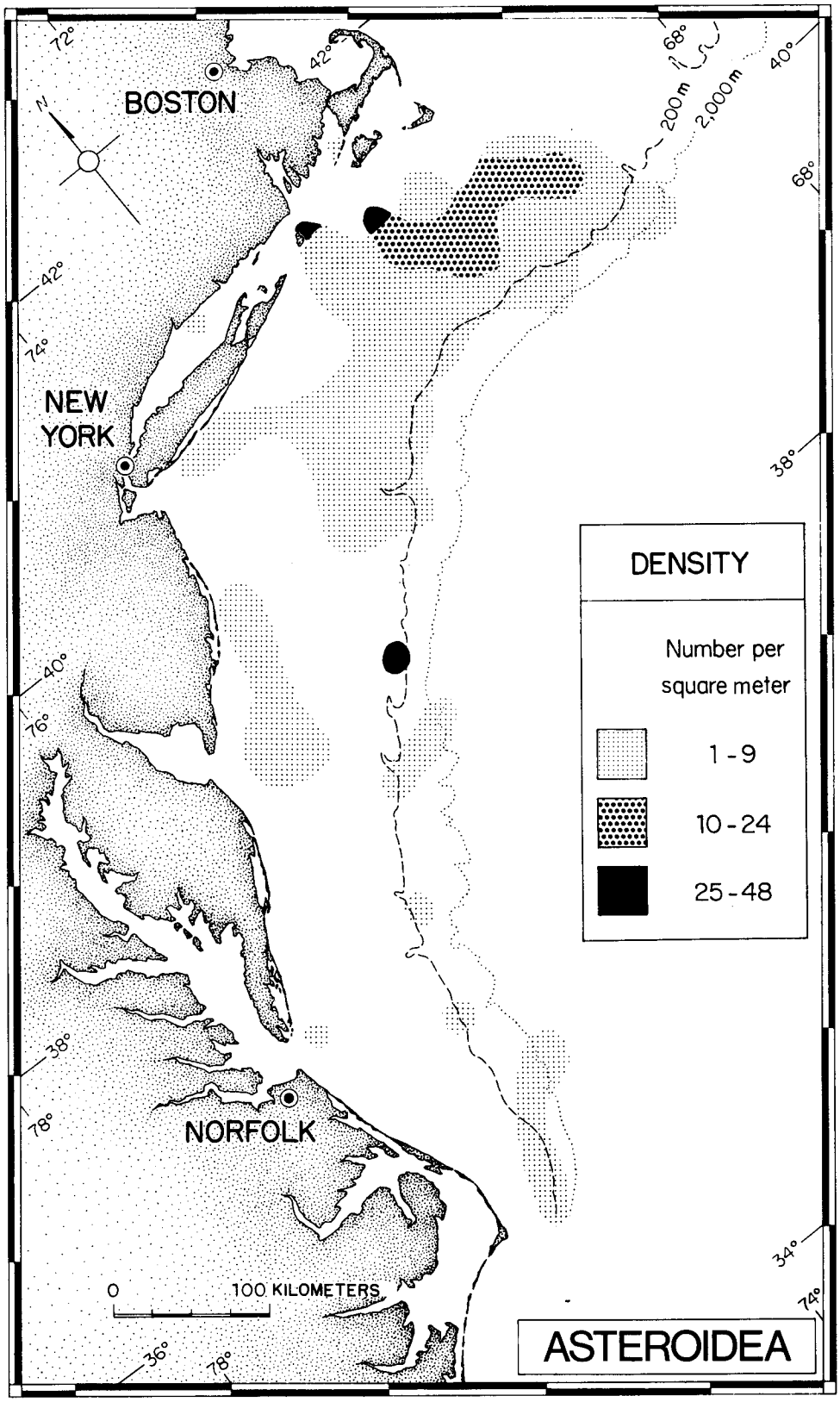

FIGURE 70.—Geographic distribution of the density of Asteroidea, expressed as number of individuals per square meter of bottom area.

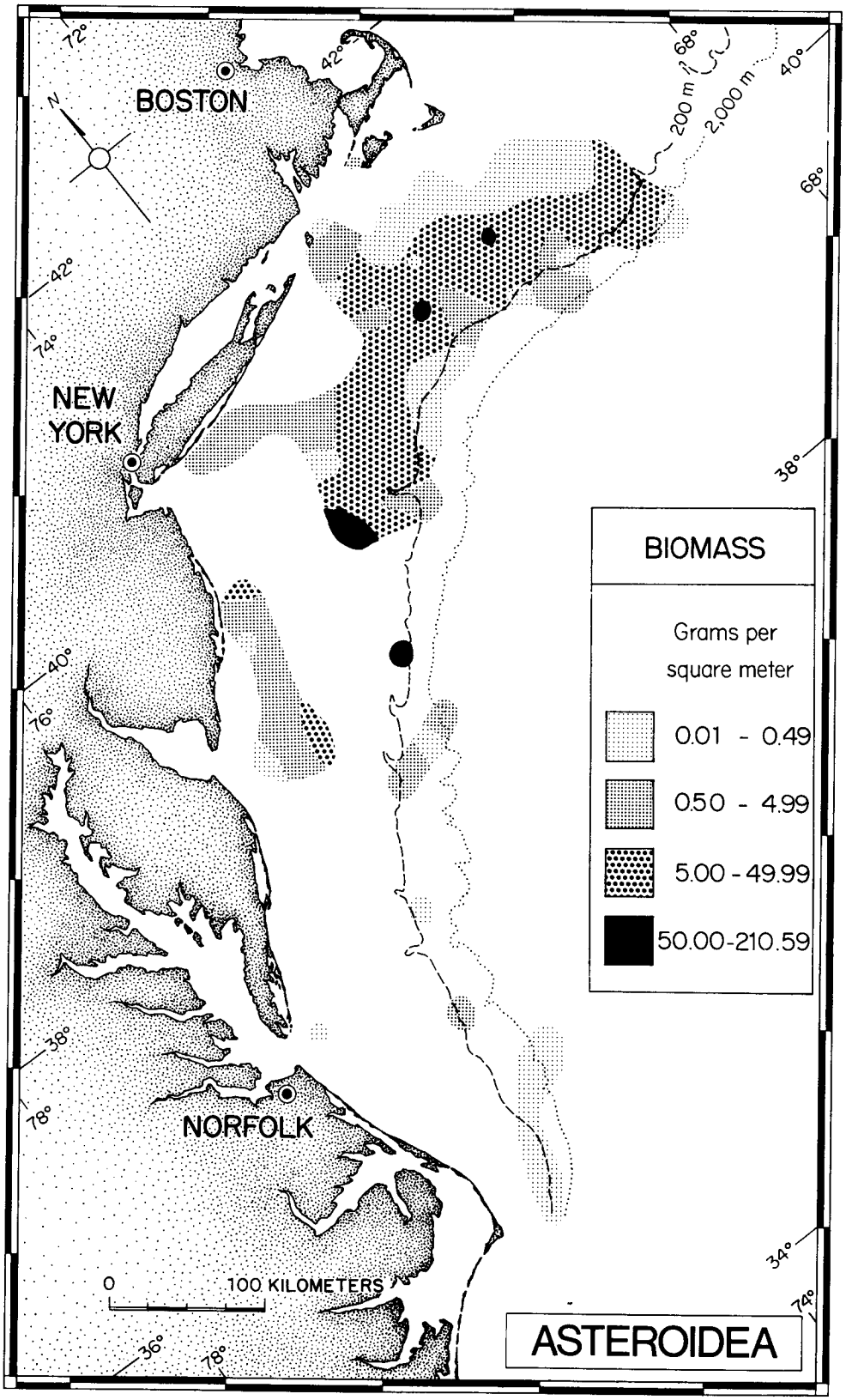

FIGURE 71.—Geographic distribution of the biomass of Asteroidea, expressed as damp weight per square meter of bottom area.

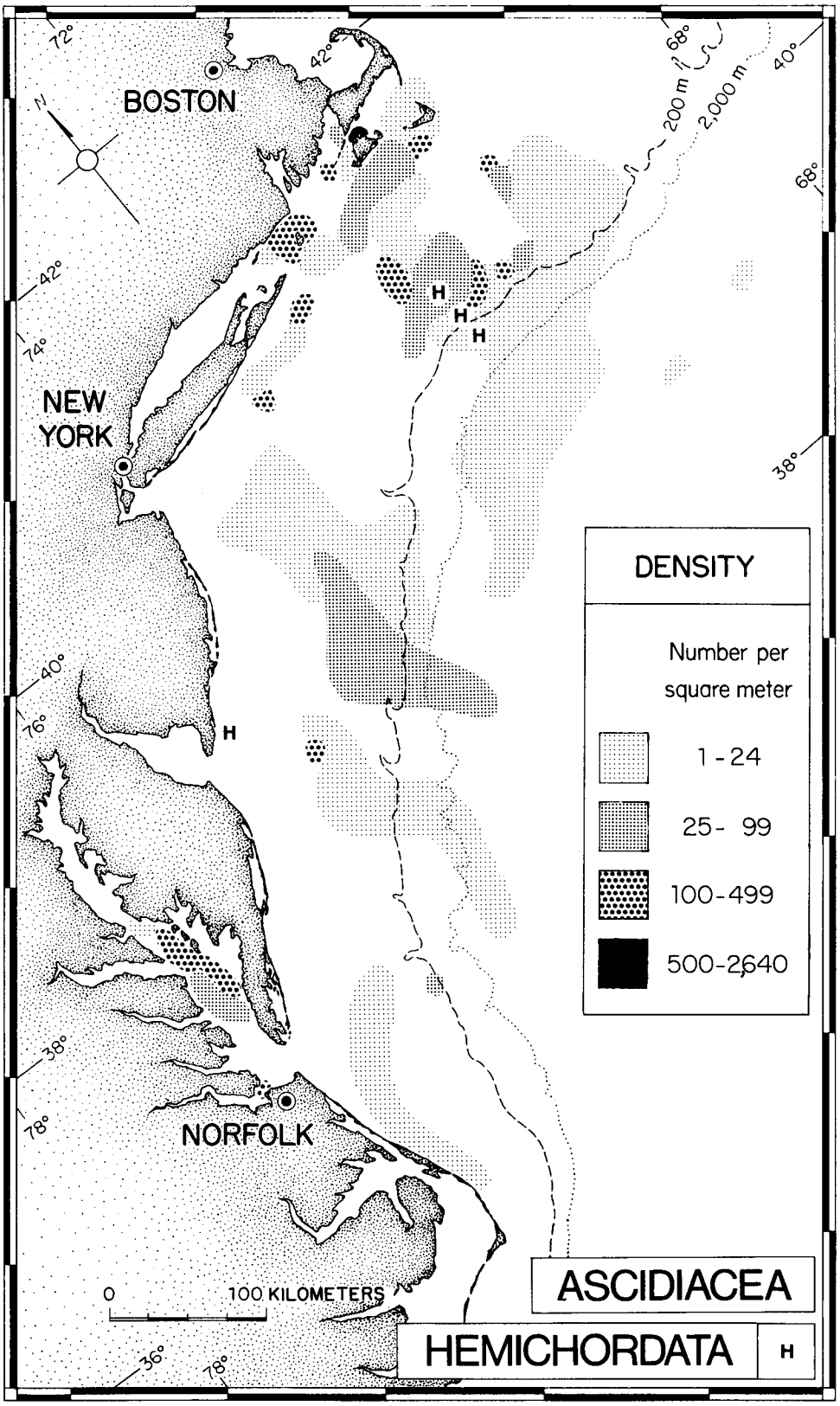

FIGURE 72.—Geographic distribution of the density of Ascidiacea and Hemichordata (*H*), expressed as number of individuals per square meter of bottom area.

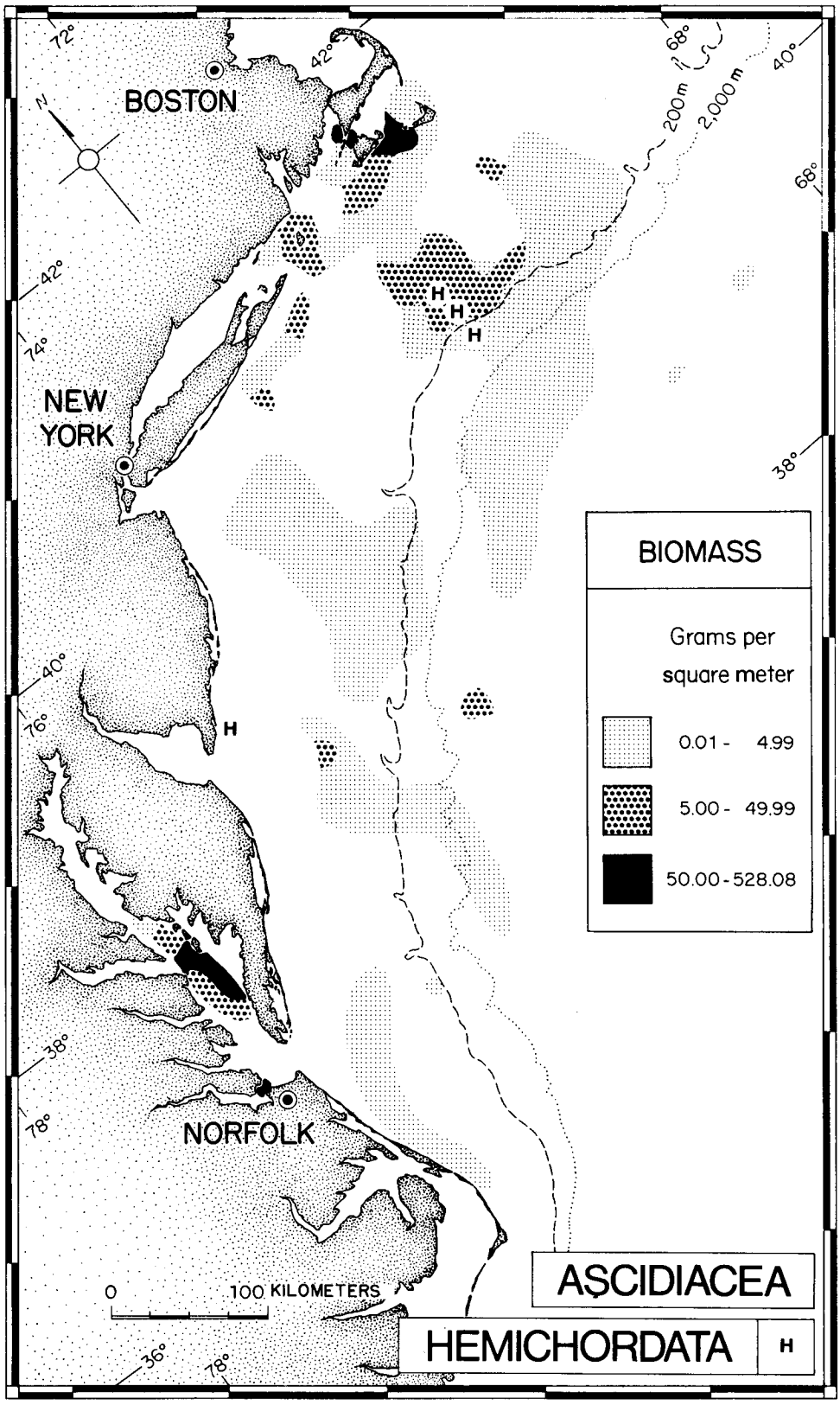

FIGURE 73.—Geographic distribution of the biomass of Ascidiacea and Hemichordata (*H*), expressed as damp weight per square meter of bottom area.

Chesapeake Bay. The pattern of biomass was similar to that for density. Biomass in most areas was less than 5 g/m². In substantial areas in Southern New England, and in a few small areas farther south, the biomass averaged between 5 and 528 g/m².

SELECTED GENERA AND SPECIES

This section deals with the geographic distribution of 24 selected genera and species of macrobenthic invertebrates. These particular forms were selected because of their common occurrence and a few were selected because of their distinctive distribution. See figures 74–79.

The species and genera illustrated, listed by phylum, are as follows:

PHYLUM ANNELIDA

Sternaspis scutata (Renier) (fig. 74*A*), a moderately small (1 cm), stout, burrowing polychaete of the family Sternaspidae. It commonly inhabits silty sediments.

Scalibregma inflatum (Rathke) (fig. 74*B*), a medium-size (1–5 cm) polychaete of the family Scalibregmidae. This species, which commonly is found in silty sand, is an important food of demersal fish.

Hyalinoecia tubicola (Müller) (fig. 74*C*), a large (10–25 cm), tube-dwelling polychaete of the family Onuphidae. This is an active, epibenthic species that is characteristic of deep water.

PHYLUM POGONOPHORA

Siboglinum ekmani (Jagerston) (fig. 74*D*), a small (5 cm), slender pogonophoran of the family Siboglinidae. This is a tube-dwelling species characteristic of a deepwater environment.

PHYLUM MOLLUSCA

Arctica islandica (Linnaeus) (fig. 75*A*), a rather large (8–15 cm), bivalve of the family Arcticidae. This is a slow-growing Continental Shelf species that is very abundant in some localities. It usually inhabits silty sand sediments.

Cerastoderma pinnulatum (Conrad) (fig. 75*B*), a moderately small (1 cm), bivalve of the family Cardiidae. This small cockle has been taken in a wide variety of bottom sediments.

Thyasira spp. (fig. 75*C*), represented in our samples by five species of small (less than 1 cm), bivalves of the family Thyasiridae. The species represented are: *ferruginosa, flexuosa, ovate, pygmaea,* and *trisinuata.* These bivalves are most commonly found in offshore waters and in fine-grained bottom sediments.

Cyclocardia borealis (Conrad) (fig. 75*D*), a medium-size (3–5 cm), bivalve of the family Carditidae. Although it is more common in boreal waters, our samples showed it had a broad distribution in the Middle Atlantic Bight region.

Lucinoma blakeana (Stimpson) (fig. 76*A*), a moderately large (5–7 cm), bivalve of the family Lucinidae. This thin-shelled species is most common in the Outer Continental Shelf waters.

Ensis directus (Conrad) (fig. 76*B*), a large (10–17 cm), bivalve of the family Solenidae. This is a very active, sand-dwelling species that inhabits shallow inshore waters as well as the Offshore Continental Shelf.

Polinices spp. (fig. 76*C*), represented in our samples by two species, *P. duplicatus* and *P. immaculatus.* These species of carnivorous gastropods, family Naticidae, are typically found on sandy sediments.

Alvania spp. (fig. 76*D*), represented in our samples by at least two species, *A. brychia* and *A. carinata.* These small (less than 5 mm) gastropods, family Rissoidae, are usually associated with silt-clay bottom sediments.

PHYLUM ARTHROPODA

Ampelisca spp. (fig. 77*A*), this genus of gammaridean amphipods is represented in our samples by six species: *abdita, aequicornis, agassizi, macrocephala, vadorum,* and *verrilli.* They are medium-size (4–7 mm), to moderately large (20 mm), tube-dwelling species. This is a common genus and representatives are distributed in inshore and offshore waters; very abundant in some localities.

Leptocheirus pinguis (Stimpson) (fig. 77*B*), a moderately large (10–17 mm), gammaridean amphipod, family Aoridae, that is typical in Continental Shelf sand and silty-sand habitats. This species is a very important food of demersal fish.

Phoxocephalus holbolli (Kröyer) (fig. 77*C*), a moderately small (5–7 mm), member of the family Phoxocephalidae. This species characteristically inhabits bottom sediments composed of fine sand.

Trichophoxus epistomus (Shoemaker) (fig. 77*D*), a medium-size (6–8 mm), burrowing amphipod of the family Phoxocephalidae. It is a widely distributed species that inhabits sand and silty-sand sediments.

Cirolana spp. (fig. 78*A*), a medium-size (1–2 cm), member of the Isopoda, family Cirolanidae. It is represented chiefly by *C. polita* (Stimpson), but at least one additional species is included. This is a

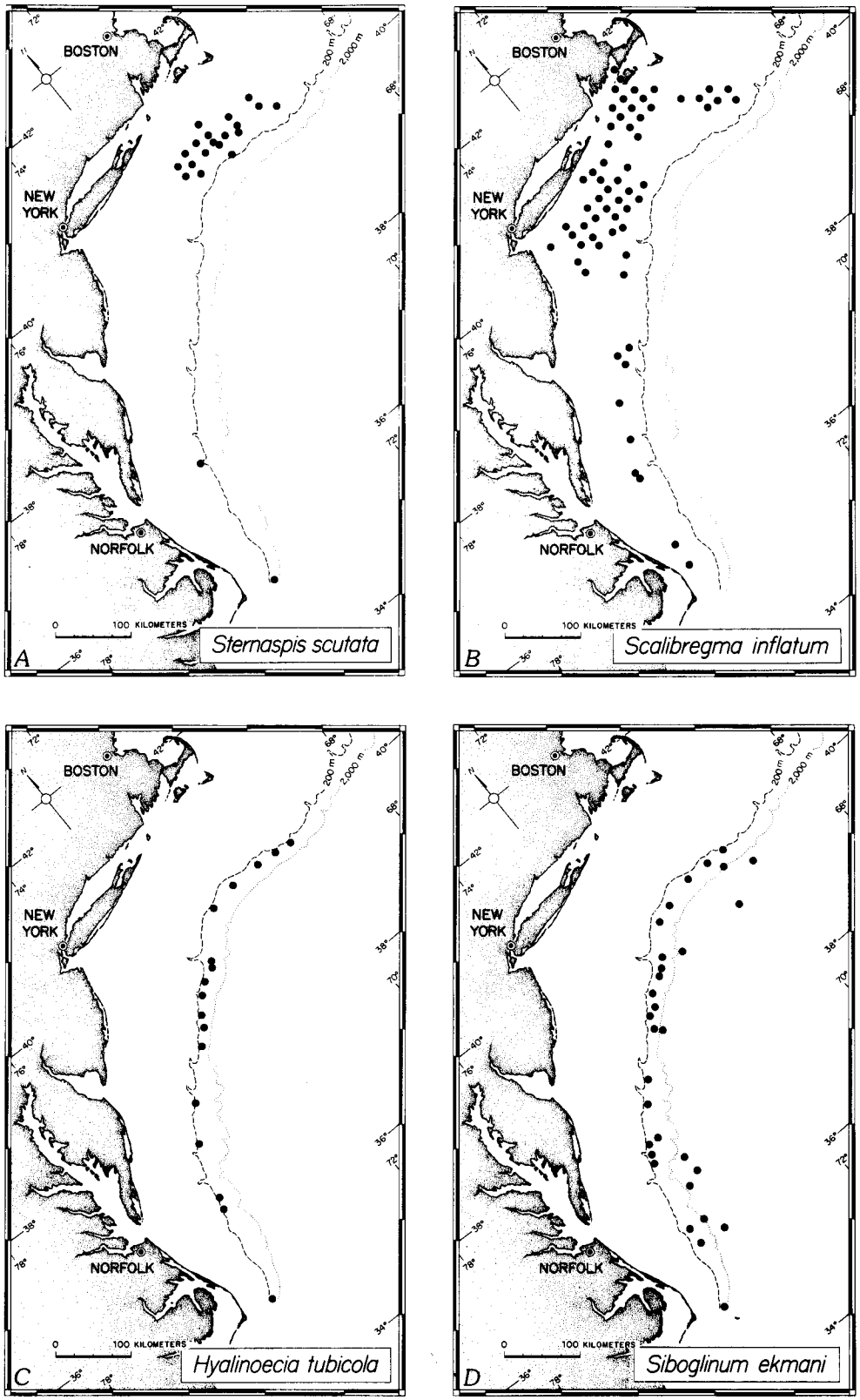

FIGURE 74.—Geographic distribution (indicated by dots) of three selected species of Annelida (*A-C*) and one Pogonophora (*D*).

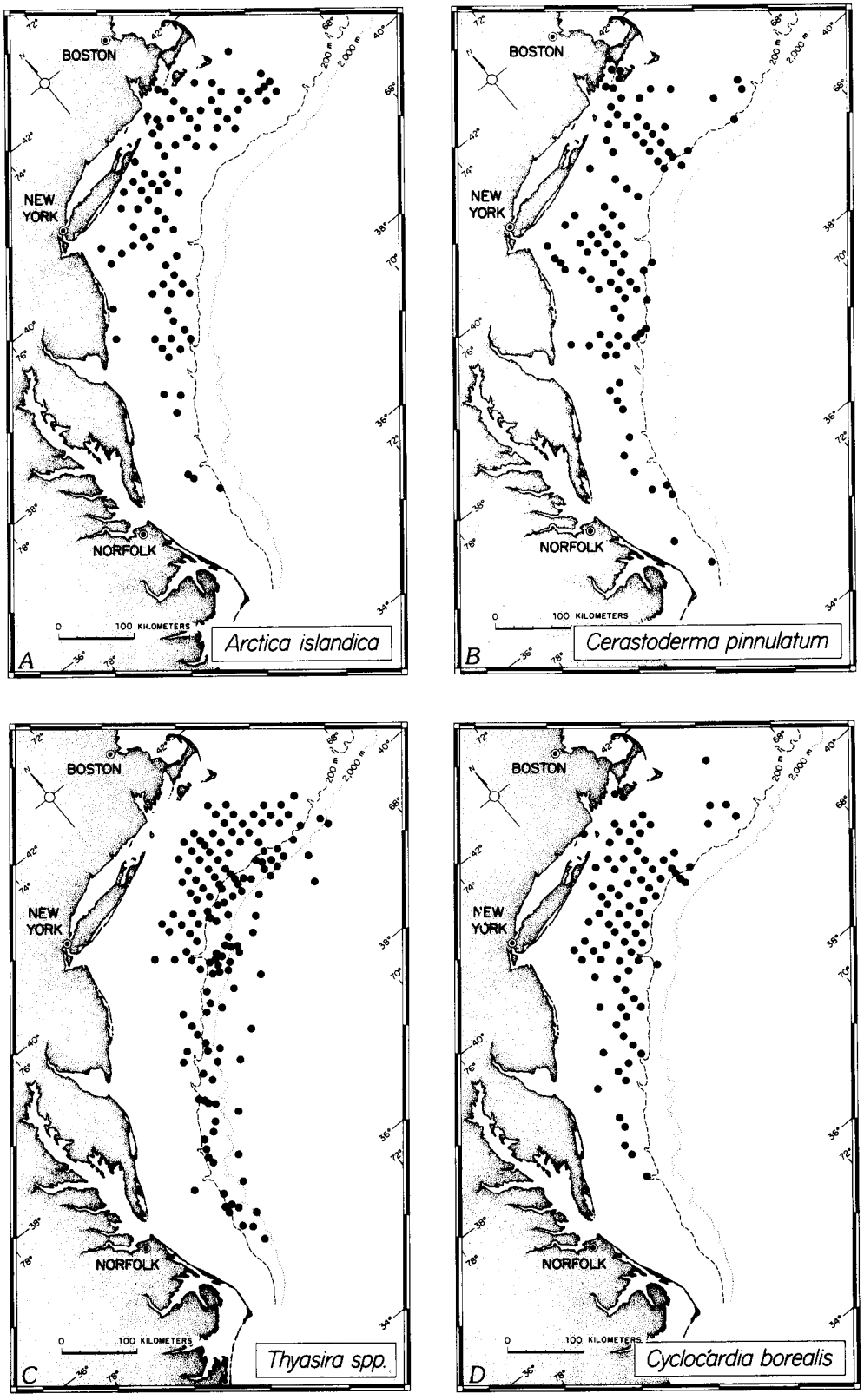

FIGURE 75.—Geographic distribution (indicated by dots) of selected bivalves, phylum Mollusca.

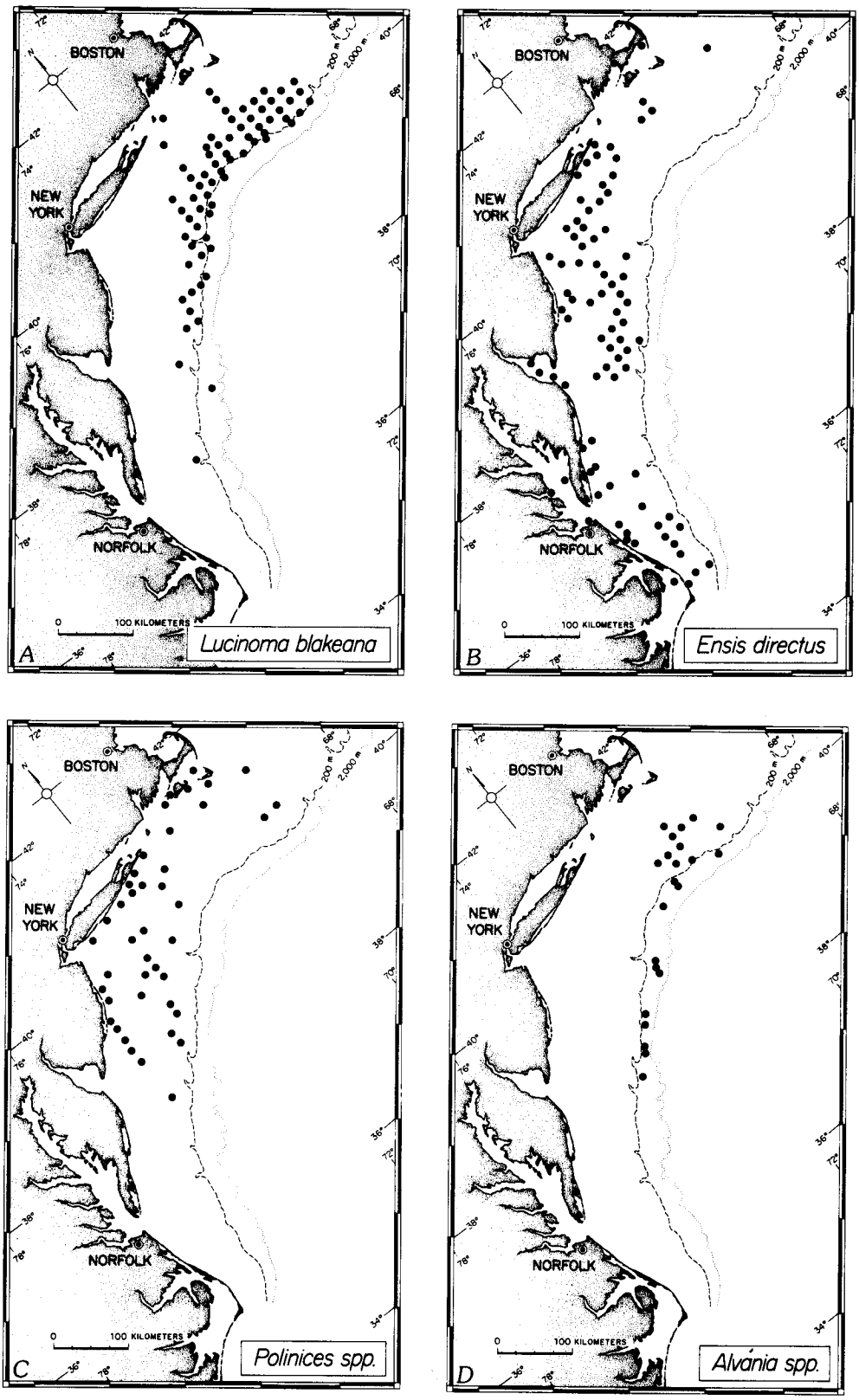

FIGURE 76.—Geographic distribution (indicated by dots) of selected bivalves (*A*, *B*) and gastropods (*C*, *D*), phylum Mollusca.

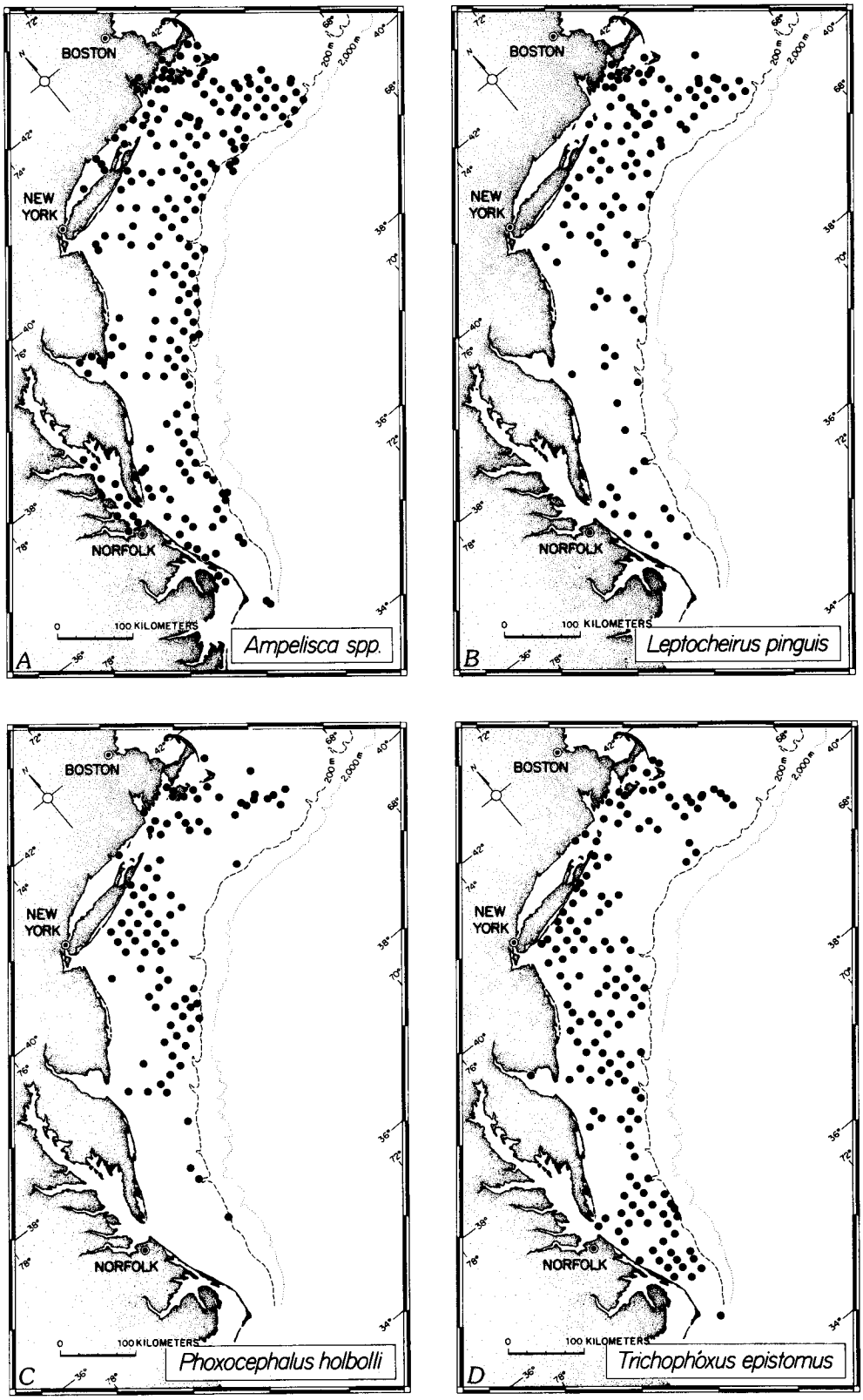

FIGURE 77.—Geographic distribution (indicated by dots) of selected amphipods, phylum Arthropoda.

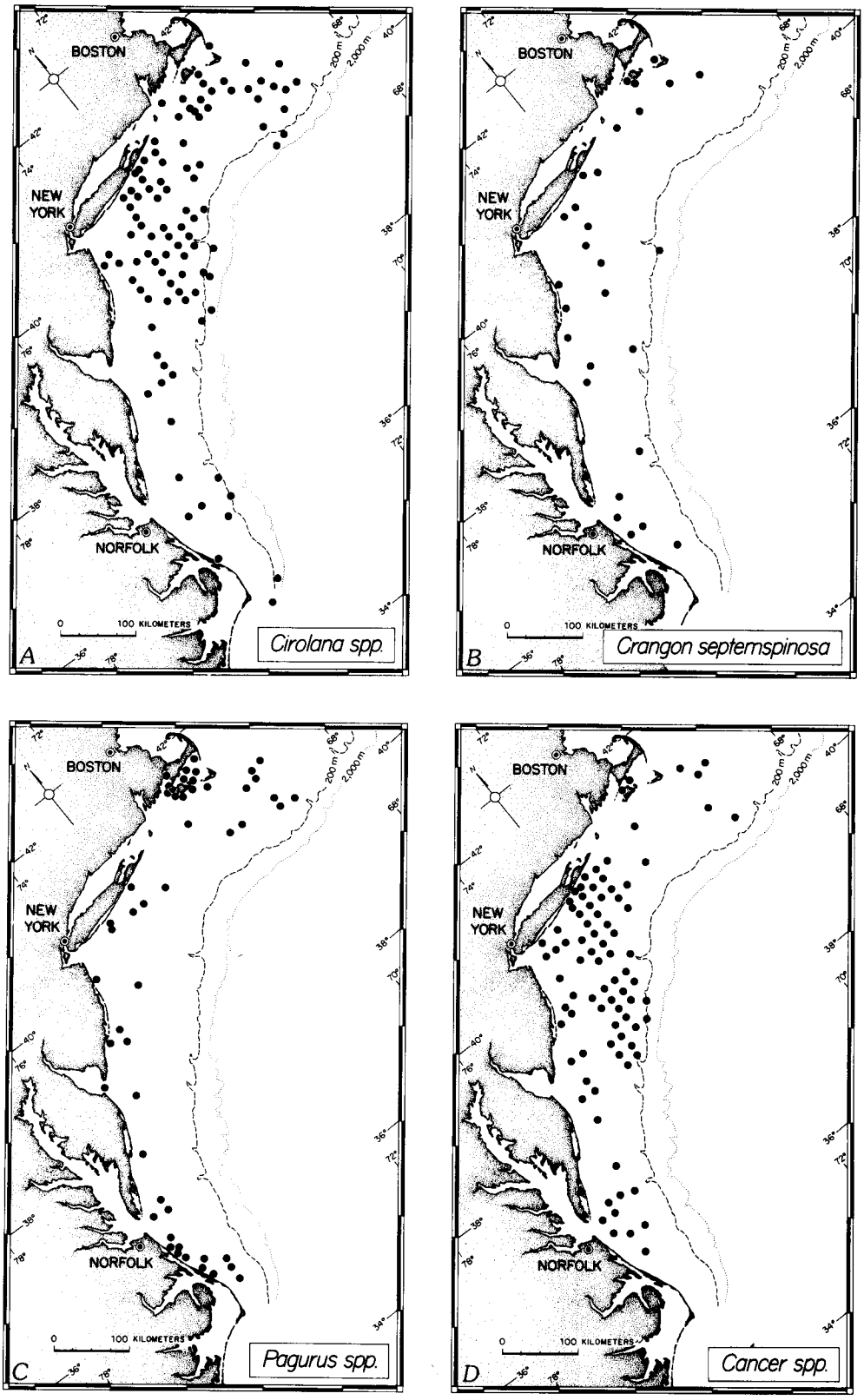

FIGURE 78.—Geographic distribution (indicated by dots) of a selected isopod (*A*) and decapods (*B, C, D*), phylum Arthropoda.

common and widely distributed genus in the Middle Atlantic Bight region.

Crangon setemspinosa (Say) (fig. 78*B*), a moderately small (5–8 cm), caridean shrimp, order Decapoda. Typically, it inhabits sandy sediments, and is distributed throughout the region in both inshore waters and much of the Continental Shelf.

Pagurus spp. (fig. 78*C*), medium-size (5–10 cm), members of the order Decapoda, family Paguridae. They are represented in our samples by three species: *P. acadianus, P. arcuatus,* and *P. pubescens.* The most common and broadly distributed species is *acadianus.*

Cancer spp. (fig. 78*D*), a rather large (5–15 cm), heavy-shelled brachyuran crab, order Decapoda, family Cancridae. This genus was represented by two species: *C. borealis* and *C. irroratus.* Both species inhabit a variety of bottom sediments and are found throughout the Middle Atlantic Bight region.

PHYLUM ECHINODERMATA

Echinarachnius parma (Lamarck) (fig. 79*A*), a moderately large (5–8 cm), member of the class Echinoidea, family Scutellidae. This is a very common species and is characteristic of sandy bottom sediments.

Echinocardium cordatum (Pennant) (fig. 79*B*), a rather large (5–10 cm), member of the class Echinoidea, family Spatangidae. This is a burrowing species that usually inhabits sand sediments in moderately shallow water. It is found only in the southern part of the region.

Astropecten spp. (fig. 79*C*), moderately small (8–12 cm), members of the subclass Asteroidea, family Astropectinidae. This genus is represented by two species: *A. americanus* (Verrill), and *A. articulatus* (Say). These are carnivorous, burrowing species that are common in silty-sand bottom sediments on the Outer Continental Shelf.

Amphilimna olivacea (Lyman) (fig. 79*D*), a long-armed species of moderate size (10 mm disc), that belongs to the subclass Ophiuroidea, family Ophiocanthidae. It is a moderately deepwater inhabitant, which we found only in the northern sector of the region along the Outer Continental Shelf and upper slope.

BATHYMETRIC DISTRIBUTION

TOTAL MACROBENTHIC FAUNA OF ALL TAXONOMIC GROUPS

ENTIRE MIDDLE ATLANTIC BIGHT REGION

A pronounced decrease in total macrobenthos (that is, a summation of all taxonomic categories) was associated with an increase in water depth from the shallowest to deepest water depth classes. This relationship applied to both the number of individuals and the biomass. Consistent trends of decreasing quantities, as the depth increased within all three subareas, revealed the general nature and widespread occurrence of this relationship (figs. 80 and 81). (See table 8.)

TABLE 8.—*Number of samples within each depth range class in each subarea and for the entire Middle Atlantic Bight region*

Depth range (m)	Subarea			Entire region
	Southern New England	New York Bight	Chesapeake Bight	
0–24	35	46	84	165
25–49	27	48	48	123
50–99	56	47	15	118
100–199	19	9	6	34
200–499	14	8	6	28
500–999	8	7	10	25
1,000–1,999	11	10	13	24
2,000–3,080	16	12	8	36
Total	186	187	190	563

Number of individuals.—The density of macrobenthic invertebrates was highest (averaged 2,079/m²) in the shallowest depth class, 0–24 m, and decreased to 46/m² in deep water (2,000–3,999 m), a 98 percent reduction. Table 9 lists the mean number of individuals and biomass for each

TABLE 9.—*Mean number of individuals and biomass of the macrobenthic invertebrate fauna in relation to water depth for each subarea and for the entire Middle Atlantic Bight region*

Water depth (meters, to nearest m)	Mean number of individuals per square meter				Mean biomass in grams per square meter			
	SNE	NYB	CHB	Entire area	SNE	NYB	CHB	Entire area
0–24	2,426	2,430	1,742	2,079	404	804	114	368
25–49	3,090	752	722	1,254	343	123	102	163
50–99	2,988	1,390	795	2,073	237	166	80	189
100–199	934	442	969	810	89	36	109	79
200–499	468	255	350	382	34	17	28	28
500–999	251	206	387	293	17	7	11	12
1,000–1,999	75	66	75	72	5	5	11	7
2,000–3,080	48	47	40	46	8	7	10	8